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ABSTRACT

This paper argues that teachers and students should be creators as well as consumers of computer software, not only so that they might better appreciate the skills involved, but also to improve teacher effectiveness in the classroom. As part of their own class work, 13 second-year student teachers developed a branching program using simple basic commands. The purpose of the program was to provide direct feedback to student responses. They then taught 25 children in grades 4-6 the same program. The student teaching experience allowed the teachers to learn the branching program, share that knowledge with children, and gain an awareness of the importance of feedback in teaching. (DB)

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COMPUTER LITERACY FOR STUDENT TEACHERS AND ELEMENTARY CHILDREN THROUGH PROGRAMMING

by

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March 1990

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Abstract:

Thirteen second year student teachers taught twenty-five grades 4-6 children to develop a branching programme using simple basic commands. The student teachers first developed a similar programme as part of their presentation during their curriculum class. It is argued that teachers and students should be creators as well as consumers of computer software. Problems do occur when the single classroom computer is used exclusively for reinforcement activities.

Computer Literacy for Student Teachers and Elementary Children Through Programming

John D. Elliott

Should teachers and students be creators as well as consumers of computer software? With the exception of the use at the elementary level of Logo, few students encounter programming unless they select a specific course in high school. In several subjects however, commercially prepared computer programmes are used to either deliver or supplement the curriculum.

It might be argued that if we attempt to learn a skill, even if mastery is not the goal[1], we will more appreciate the skilled master. We will also be more likely to effectively use his product. I can appreciate the guitar technique of Django Reinhardt having attempted to learn the instrument. The options of a computer paint programme may be more appreciated and utilized if the user has first created

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simple graphics exclusively employing pokes.

While it may be desirable that students and teachers learn to programme, it has been suggested that programming is so difficult that it would be an inefficient use of time to teach this skill to either group.

Although these questions concerned me, a different problem led to a test of the learnability and value of programming in basic. My curriculum students were aware that during evaluation children should be told (or helped to find out), not only whether they were correct, but why they were right or wrong. A branching basic programme in which each multiple choice answer led to a specific response which explained why the answer was or was not correct could be constructed using a few basic commands.

All thirteen student teachers had gone through a workshop-based experience at the College of using a simple word processor and a few Logo commands. Despite this, they were mainly reluctant learners, due to either difficult secondary school computer literacy programmes, or the lack of any computer experience. With some fear and trepidation they approached this programming task.

They were given a programme to enter, use and alter. The method of alteration would enable a change in numerals or operations within the questions. Later they would follow the same approach with words. As part of their class presentation on assigned topics at the College, the student teachers prepared a review programme using this technique which influenced the content of my test and was marked. All of the students were able to successfully complete this task.

While we had demonstrated that they could apply this new

knowledge, we needed a situation in which they could attempt to pass this skill to someone else. Pairs of student teachers met for half an hour with a dozen grades 4-6 children in an elementary classroom. Pairs of these children were given sheets of a brief programme to enter after they had observed the student teachers demonstrate important operations on the keyboard. The teachers circulated and assisted while the pairs helped each other. The children were attentive and involved. Most were able to enter and alter a programme. It was hoped that they would be able to apply this new knowledge in their classrooms. To assist them, each student was given a printout of the programme which had been typed in. Most teachers used their single classroom computer for a reinforcement activity. As a consequence, there was not enough practice time to master the new skills.

There was a definite awareness change among the children, since before this computer experience, most of them had equated video game machines such as Nintendo, with computers. About five out of the twenty-five had a computer at home. Of these, two had some programming experience: one with a parent, the other from a teacher.

It is too early to tell whether the student teachers will continue to use their programming abilities. They are not yet practising teachers. They are definitely aware of the importance of providing explanatory feedback to student responses, whether the answers be correct or incorrect. They have learned both to programme and to share this skill with children. They have also learned the importance of feedback in teaching.